BOTANICAL TRAILS IN OLD MEXICO.—THE LURE OF THE UNKNOWN.

Ynez Mexia

In 1926 I enthusiastically planned a botanical collecting trip to the western states of Mexico with the idea of exploring the more remote districts where I felt sure collectors had not penetrated and where I hoped to secure interesting and possibly new plants from the rich flora of that sub-tropical region. I was to collect under the auspices of the Department of Botany of the University of California and the permit kindly issued me with the great golden seal of the University visibly impressed the always courteous officials of our southern neighbor even when they were unable to decipher the document.

All preparations being completed in September of 1926, I left San Francisco on the very comfortable Pacific Mail steamer. Four days of pleasant sailing brought us opposite the tip of Lower California, where we turned due east across the Gulf of California to Mazatlan, the port of the State of Sinaloa. There I was met by a very good friend, Mr. J. Gonzales Ortega, by profession a civil engineer, who has also been an enthusiastic botanist for very many years. This gentleman knows the west coast of Mexico as few know it, and has been most helpful in advising me as to the best localities for collecting.

My first trip out from Mazatlan was to Tepic, in the State of Nayarit. Tepic lies in a fertile valley in the range of the Sierra Madre mountains at an altitude of about 1000 meters. While on the new line of the Southern Pacific Railroad, it is as yet a very beautiful quaint old city, happily little touched by modern "improvements". The streets, when not consisting of mudholes, are cobbled and bumpy, with houses and walls of adobe on either side, but the houses are far apart, each set in its garden or "huerta", and the red tiled roofs nestle picturesquely among the tender greenery of the bananas, or the dark glossy green of the omnipresent coffee plants. Even the adobe walls become things of beauty in this ideal climate, for they are covered with a garment of Maiden-hair fern, while above them droop the branches of flowering or fruiting trees.

A gentleman to whom I had letters provided me with a reliable "mozo" or guide and a couple of horses, and I set out each morning to explore and collect. As I had never been in this region before, I found the luxuriance of the vegetation actually embarrassing. It was hard to know where to begin to collect and still harder to know when to stop. Mauro, my mozo, and I would ride out along a road, and then cut off over some little trail that led towards the higher mountains. The Guava trees, Psidium Guajava L., which grow wild, were in fruit and we would stop to eat and to fill our pockets when we came across them. Ferns were very abundant, growing along the trail banks and in every little ravine. Athyrium Skinneri

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(Baker) Moore and Adiantum Braunii Mett., were among them. Convolvulaceae of every size and color were everywhere along the hedgerows and clambering over shrubbery and small trees, very ornamental, but a terrible pest to agriculturists. The scandent milkweed, Dictyanthus Pavonii Decne., climbed over the thickets showing its beautifully veined purple and brown campanulate flowers. The wild fig-tree, Ficus mexicana Miq., here grows to huge proportions. As the green fruit hung high, Mauro deftly lassooed some fruiting branches for me.

A trip along the trail leading to the village of Jalcojotan took

Fig. 1. The Oil-nut Palm. Attalea cohune Mart. The nuts, about the size of an egg, are composed of an outer fibrous husk, a thin layer of orange-colored pulp and a thick stony shell containing a plump kernel which is an important source of oil, mostly used locally for the manufacture of a coarse soap. All through the Palm forests one finds mounds of these shells, broken open with stones by the patient natives.

us up into the Cordillera where we found interesting mountain flora. It was the only locality in which I found the Prochnyanthes viridescens Wats., a most beautiful plant with twin dark red bells growing along a scape two or three feet tall; it superficially resembled our Fritillarias. The Cosmos that brightens our gardens is one of the common wild flowers in Mexico, and the pink C. Seemannii (Sch. Bip.) Gray starred the openings in the woods, while the tall dark scarlet Dahlia coccinea Cav. flamed everywhere against the green of thicket or shrub. In a beautiful little glade between the hills was a veritable flower garden, bright with the red-orange Zinnia linearis Benth., a beautiful white Hymenocallis and the scarlet bracts of the Euphorbia colorata Engelm. The tall Macromeria exserta D. Don spread showy pale yellow flowers against the dark green of the hillside where the white blossoms of Passiflora sicyoides S. & C. and its trilobate leaves festooned the lower trees. Growing in the neighboring tangle I found a perennial herbaceous composite, height about 60 cm., with conspicuously winged stems and flowers an inch across, lemon yellow in color. This has turned out to be a new species, Verbesina pantoptera Blake, (type no. 1317608 U. S. National Herbarium). The Hibiscus grows wild in the denser woods and brightens the shade with its crimson blossoms. I collected several kinds, one bearing a dark red flower being new, named Hibiscus aniaster by Mr. Paul C. Standley.

One day we went to the Cerro de San Juan, the nearest spur of the Cordillera, up an almost obliterated trail said not to have been used since the mountain was a stronghold of bandits during the revolution a few years ago. The stream up which we worked was arched with many strange deciduous trees where a delightful but elusive fragrance kept me seeking until I traced it to the lovely creamy blossoms of the Clusia Salvinii Donn. Smith., a rather small tree with thick glossy leaves and a smooth trunk. Many ferns and mosses grew in the dense shade beneath and among these were beautiful bright pink Sobralia decora Batem. (probably), (det. Oakes Ames), and a new Begonia, B. ornithocarpa Standl., in fruit. When we descended from the mountain our trail led us over the more level ground, with occasional clumps of small trees and thickety growth. One shrub, named "Pie de Pajaro" by my mozo, had abundant green fruits, in axillary umbels, and, proving to be a new species, has been called Deppea macrocarpa by Mr. Standley.

After two weeks collecting in Tepic, I went southwest to Yxtlan del Rio lying somewhat higher in the mountains, and with the aid of a very good mozo, Juan, collected around there. By riding up the sides of the mountains we got into the lower fringe of the oak and pine belt. In the openings of these woods many composites were now in flower. On the more sunny slopes we found cacti, among others, a red-fruited Cereus sp. This latter strikingly demonstrates in what manner the slabs lose their spines and shape and become trunk-like as the cactus approaches tree form in age.

An attractive spreading tree with glossy leaves and large white flowers opening in the late afternoons proved to be one of the strange

Morning-glory trees, Ipomaea murucoides R. & S., while in a pasture in the valley a new nightshade was found in fruit, Solanum Nayaritense Standl.

Returning to Mazatlan with my collection, my next excursion was farther south to Tuxpan, in the State of Nayarit. This was on the Rio San Pedro, one of the largest rivers draining into the Pacific Ocean which in flood inundated the whole territory in 1925. The soil in this part of the country consists of alluvial deposits brought down by the river, and its fertility is incredible. Crops (and weeds) grow almost overnight. There are great "Palapares", forests of the Oil-nut Palm, Attalea cohune Mart., which are most beautiful, and so luxuriant that not even a ray of the tropical sun can penetrate their canopy at midday. The shade is so dense that only the young palms and an odd, broad-leafed maiden-hair fern, Adiantum latifolium Lam., can flourish there, but around the margins of these forests there is a fringe of other trees and shrubs. Among those collected was a composite, a large coarse erect freely branching plant, suffrutescent, about two meters in height with orange-colored heads borne on rather long pedicels. This has been named Zexmenia Mexiae by Dr. S. F. Blake, (type no. 1317609, U. S. National Herbarium) and was called "Tacote Amarillo" by my mozo.

The prevailing family here is the Leguminosae, and its representatives occur in every form from tiny little ground runners to great trees. Leguminous shrubs, many of them sharply hooked, are in legions, and vines and scandent shrubs make progression except along trails most difficult.

From Tuxpan I took a dugout canoe down to the Mexcaltitlan, a little village of shrimp-fisheries in the delta of the San Pedro, and there encountered large and active Anopheles and the "Jejenes" or biting gnats which feast on stranger and native alike. The village was on a small island in the vast shallow lagoons which stretch along this coast for leagues and leagues. Lovely blue Water-lilies, Castalia elegans Greene, grew by the acre and the Corpus Christi, Nelumbo lutea (Willd.) Pers., lifted its stately white flowers and spread its immense pads in the sunshine. The lagoons, fresh to brackish, were everywhere broken by what looked like wooden islets, which when approached turned out to be association of water-loving trees: Mangrove, Rhizophora mangle L.;. the Buttonwood, Conocarpus erectus L.: Phyllanthus acidus (L.) Skeels and others, all growing in the shallow water. In places these trees were so smothered by vines, principally Convolvulaceae, that they lost all tree shape and became but living green mounds. Collecting was done from a canoe, and though the individuals were countless in this delta region they represented few species, so as soon as I had collected these I was glad to escape from the mosquitoes and the odoriferous shrimp and return to Tuxpan and to Mazatlan.

My next trip was to Los Labrados, about thirty miles south of Mazatlan in the State of Sinaloa. Here I was in the thorny coastal jungle. Leguminosae predominated in tree and shrub form, the

Acacias being especially abundant. The rose-pink "Coronilla", Antigonon leptopus H. & A., fairly covered the landscape, wreathing every thicket with its beautiful pink sprays, and the Convolvulaceae in many colors smothered the thickets and trees up to 75 feet. The strange "Tree Morning-glory" bears its typical white flowers while the branches are yet leafless, but does not here come into flower until December or January.

My next venture took me by steamer down the coast to far-away Puerto Vallarta in the State of Jalisco. Here I collected for a month, near the coast and in the foothills. The Lantana, Lantana camara L., called here "Señorita", is most abundant and it is always interesting to meet one of our garden favorites growing wild. Many epiphytes are seen in the higher trees. A large-leaved tree of the same family as our Rhus, Comocladia Engleriana Loesener, unfortunately not in flower or fruit, was collected with disastrous effects to my mozo as it put him out of commission for a week with badly swollen and inflamed face and hands. This tree is called "Hincha-huevos" by the natives, because they have the notion that an egg coming in contact with any part of it will burst. Another tree named "Manzanita" from the small, apple-like fruits was shunned by my mozo. This is the Hippomane mancinella L. of the Euphorbiaceae. Neither of these trees affected me.

Climbing around the precipitous hills rising abruptly from the water's edge, I found in the understory of the dense woods a small tree, luckily both in flower and fruit, which proved to be new, Eugenia Mexiae Standl. A Piper growing in this same dense shade showed large oblong oblique leaves and the cord-like spikes that have caused the natives to call all the pipers "Cordoncillo". Dr. Wm. Trelease has named this Piper Ynesae. A little higher on the slope where the trees thinned out, a struggling shrub curiously like our Elderberry in appearance showed dense clusters of rich purple drupelets. It proved to be Callicarpa subpubescens Hook. & Arn., of which the type is "said to have been collected in Tepic" in 1840, and which has not been found since.

An interesting side trip I made was in a dug-out canoe by sea some twenty or thirty miles down the coast to a little cove named Quimixto inhabited only by seven very poor families. The country was very wild in this locality, and I stayed five days or until my collecting equipment was all used up. The heavily wooded hills showed in the main the same species as farther north, but another new Eugenia turned up, Eugenia pleurocarpa Standl. It showed a large, dark purple, ridged fruit, said to be edible. I collected the same thing later in the Sierra Madre Mountains at an elevation of about 2000 meters, but nowhere was it abundant. Another new shrub, Cephaelis sessilifolia Standl., had sessile, oblong leaves and a striking bright blue drupe in large bilobate deep red bracts. In this locality I collected also another new Piper, named Piper Quimixtense by Dr. Trelease. I fear the simple inhabitants of Quimixto will never know of the honor done their hamlet. A new Rousselia found here has not yet been named.

It might seem appropriate that in this most remote and hidden nook of this out-of-the-way corner of the world, that I should have collected among other composites one that has turned out to represent a new genus. On December 1, 1926, my mozo, Reyes, and I followed the little river some distance and took a trail that wound up the steep forested volcanic mountains that here pitch directly down to the ocean. After climbing for two or three miles we came to a small stream, "El Arroyo del Chorillo", named thus from a little waterfall higher up, and working down this stream a bit collected this plant among others along the sandy stream-bed. It grows to about a meter in height, is suffrutescent to woody below and has small globular heads of white flowers.

This specimen was sent for determination among a number of Eupatoriums to Dr. B. L. Robinson, of the Gray Herbarium, Harvard. I quote from his letter:

"You will be pleased, I think, to notice that there was a new genus among these, namely no. 1202, which is a very interesting plant curiously simulating Eupatorium monanthum. I have been pleased to name it in your honor and have called it Mexianthus mexicanus, in the hope that its cheerfully alliterative appellation will be easily remembered and will keep in mind your noteworthy service in exploration."

Returning to Puerto Vallarta I next went to the almost uninhabited and precipitous foot-hills of the Cruz de Vallarta, altitude about 700 meters, where I stayed at the hut of a wood-cutter, setting up my cot in his banana patch. Of course, maize is the staple crop all over the Republic, with tobacco on the hot coastal belt and coffee at higher altitudes, but each little wattle-and-thatch hut on the hills has its patch of sugar cane and bananas, much as we at home grow a garden of potatoes and corn. The hills were heavily wooded, there being many valuable hardwoods on these slopes, while in the dense shade flourish numerous flowering shrubs. The flaming red flowers of Pedilanthus Palmeri Millsp., resemble tiny candles in the gloom. Up to this time the plant had only been reported from its type locality, Tepic. A small tree of the understory growing on the steep side of a cañon showed minute white flowers and panicles of little orange and red drupes. This has been named Psychotria Mexiae by Mr. Standley.

Exploring these volcanic mountains was somewhat strenuous as most of them are standing on edge. The woodcutter's boys were the companions of my rambles and a thirteen year old would climb any tree of not too great girth by clasping it with his arms and half walking, half hitching his way up.

Near a streamlet in a deep cañon we found a tall herbaceous plant, an Euphorbia, with small pale green leaves and tiny greenish flowers. My curiosity was aroused by the importance given it by my native friends, who call it "Hierba del arlomo" and who stated that it was a specific for the bite of the dreaded "arlomo". It took a good deal of investigating to discover what an "arlomo" was but

I finally made out that it was an insect that occasionally stung human beings, and that the limb of humans thus attacked become excruciatingly painful and swollen, gangrene sometimes setting in and the limb or life itself often being lost from the effects of the poisonous bite. One of the proofs of the malicious character of the arlomos was that at night it gave out two greenish points of light. Later near a stream I discovered an arlomo, evidently a glow-worm, bottled it, in spite of the remonstrances of my guide, and brought it home for indentification. Dr. E. C. Van Dyke, entomologist, declares it to be a female glow-worm, family of the Cantharidae (Lampyridae) and absolutely harmless. However there can be no doubt that occasionally people are bitten with fatal results, but Dr. Van Dyke considers the culprit to be generally the Black Widow or Hour-glass Spider, Lactrodectus mactans Fabr., which is extremely poisonous.

The reputed curative herb, however, interested me, even if I doubt its efficacy, so that I have been anxious to get its identification and find out some of its attributes. I was therefore somewhat surprised to learn that it is a new species, now bearing the name of Euphorbia Mexiae Standl.

On my return to Puerto Vallerta there was no steamer to take me back to Mazatlan so I went three days journey over the passes by pack train to the crest of the Sierra Madre, here running up to about 7000 feet. My destination was the old mining town of San Sebastian, nestled in the valley of the same name just under La Bufa, the highest peak in this region. This valley is just below the frost line, while the temperature drops to the freezing point on the overhanging crests. The climate is delightful; bracing, clear and sunny in the daytime, but sharply cold at night, and crops and fruits from both tropical and temperate climes grow here abundantly.

The mountains are very rugged and steep, cut into many narrow, deep cañons by the clear streams that come tumbling down from the crests. These cañons are crowded with deciduous trees and shrubs, but the slopes and crests are clothed with open pine and oak forests. The varieties of oak are legion, among them some of the largest and most stately oaks it has been my fortune to see. The pines are also of many species, all that I found but one, being five-needled, and quite different in habit from those of more northern climes. They have not the pyramidal form so marked in our conifers but are quite umbrella-shaped with spreading branches and mostly open foliage, the very slender flexible needles fully fifteen inches long. The tufts of needles ripple in the breeze and catch the glint of the sunshine as our shorter-leaved pines cannot do.

The undergrowth shows innumerable species of the Labiatae and many Compositae. In the valleys black walnuts grow to a size unknown to us, while ashes flourish mightily. Avocados and lemons grow wild. Milkweed, Asclepias elata Benth., and the "Tomatillo", Bunchosia Palmeri Wats., with its yellow fruits, are common along the trailsides, while the fragrant little pink, lily-like flowers, Sabbatia gracilis Salisb., fairly star the hillsides.

A few new species were discovered in this mountainous region both on the mountain slopes and in the steep cañons. Along the banks of the "Arroyo de las Casillas" in the shade of the higher trees overhanging the clear stream was a slender tree of the Malvaceae, showing beautiful canary-yellow blossoms and the great broad leaves which have induced Mr. Standley to name it Pavonia amplifolia. Deppea hamelioides Standl., was discovered along the banks of the Arroyo del Monte Oscuro, so called because the ravine is so deep that the stream is perpetually shaded. It is a slender herb, in fruit when collected, showing open clusters of small capsules. In the dark, shady cañon of Arroyo Segundo, the oaks had their trunks and horizontal branches covered with a luxuriant moss growth, and in these lush beds were small succulent plants, about fifteen cm. high, with erect stems and symmetrical spreading tops for all the world like miniature trees. Dr. Trelease has named them Peperomia Mexiae.

On the trail to Real Alto, in an opening of the oak forest here clothing the slopes, the bright orange flowers of a shrubby composite were collected. Dr. Blake has named it Verbesina heterocarpa. On the dry ridge, Loma de Garrote, scantily clothed with stunted pines, Sphacele pinetorum Standl., was found. It had a deep taproot, was from one to two meters in height, with several woody stems and brick red flowers. I never found this shrub again. It was interesting to note that while along the coast the Leguminosae dominated the flora, at this altitude (between 1500 and 2500 meters) the Compositae have the greatest representation.

On the trail from San Sebastian to Real Alto, a scandent shrub of about three meters climbing over a thicket showed insignificant white flowers and soft densely pubescent foliage, so is named Allophylus mollissimus Standl. Another novelty was a tall composite with no rays, yellow-green disc flowers and grey-green smooth leaves called Verbesina glaucophylla by Dr. Blake.

The highest peak of the Sierra Madres here is La Bufa, 2500 meters, and just below the last rocky point are a few little huts, the remains of an ancient mining village. Here I came for a week with my mozo, Jose, and we sallied forth daily to collect. Among the rocks of these high peaks we clambered, every day finding new treasures. Twice we were lost and had to find our way back to the village in the dark as best we could, but it was all enjoyable too, and the scenery was magnificent. In the crevices of the rocks on La Bufa a plant was found with long straggling branches and bright red tubular flowers, but leafless. It is now named Fuchsia decidua Standl. Clinging to the rocky slope an odd composite showed a tuberous root and somewhat insignificant flower, but rather remarkable triangular leaves. It proved to be a new species, so it is now Cacalia trignophylla Blake. The north slope of La Bufa is not so steep and is densely wooded, there I found a rare little trailing plant with broadly obcordate leaves and pale pink, fringed blossoms. Drymaria excisa, Mr. Standley has called it.

After collecting and exploring along the crests I followed down the streams as far as it was possible to go, for one is always climbing up or down in this precipitous country, and on crossing a little rivulet with its fringing vegetation, my attention was drawn to tall shrubs with scanty leaves and showy corymbs of deep crimson flowers, unlike anything I had ever seen before, and which I never found again. They have turned out to be of the family Capparidaceae, and Mr. Standley has named them Cleome atrosanguinea.

Returning to San Sebastian I took the trail to the Hacienda del Ototal, dropping down to an altitude of about 1500 meters. Here

Fig. 2. "Organo". Lemairocereus montanus Britt. & Rose. Found on dry hillsides at Yxtlan del Rio. The fruits or "Pitajayas" are important summer articles of food among the poor. Growing high on the stems they are nipped off by a pair of long bamboos fastened to function like elongated shears.

the more tropical vegetation of the coast came up to meet the temperate flora of the high mountains. Bananas and sugar cane were raised at the Hacienda, but there were occasional light frosts. On the way down I found among the undergrowth near a stream tall Solanaceae, with large soft cordate leaves and yellow flowers. This is now named Bassowia malacophylla Standl. I collected in the vicinity of the Hacienda for ten days and a number of new species rewarded my efforts. Randia concinna Standl., a large tree with fruits (green) the size of small lemons, grew on the thickly wooded slopes, and Abutilon jaliscanum Standl., a fine salmon-yellow large flowered shrub, grew in dense shade by the stream bank. The determinations of a number of other species have not yet been made, so there are probably some other new ones among those set aside for study.

Above a shady little pool of the Arroyo de los Tapeistes, overhung by a yet undetermined Saurauia, was a lovely clump of rose-pink Begonias, described by Mr. Standley under the name of Begonia Mexiae. The following day a steep climb up from the valley where the Hacienda is situated brought us to the Arroyo de los Hornos near where Rynchosia tarpantha Standl., was discovered trailing long stems over the ground and whose long tap-roots required much digging. The yellowish green flowers were inconspicuous. This locality gave us another new species in the Melastomaceae, Conostegia jaliscana Standl. It was found by the side of the streamlet and was a handsome shrub from two to three meters in height, with large five-nerved leaves and a panicle of white flowers.

In the sandy bed of the Arroyo del Ototal a single specimen of a rather tall herbaceous composite was collected. It had broad, rough leaves and cymes of deep orange flowers. Dr. Blake has called it Trigonospermum hispidulum.

On the return trip from El Ototal to San Sebastian I discovered a small to medium sized tree showing clusters of white flowers whose leaves were oblong and densely tomentose above and below, at least when young. This proved to be a new relative of our Toyon Berry, Photinia oblongifolia Standl. Jose, my guide, stated that the wood was tough and durable, being used for axe handles, and that is was called "Escaramuza" by the country people.

I have made no mention of the ferns, of which I found many and varied species, but will have to talk about those another time. Besides the ferns many lichens, liverworts and mosses were collected, two of the latter proving to be new. One grew on the trunks of the palm trees (Attalea cohune Mart.) at Tuxpan and is named Isopterygium dimunitivum Bartram. The other, Merceyopsis mexicana Bartram, was found near a stream on a large rock in the valley of San Sebastian.

There was no end to the collecting, in these beautiful mountains and the bulk of my collection was made in this region. Three months slipped away before I knew it, and it was past time for me to make my way out. It was a three days pack mule trip to the railroad

over a rough and dangerous trail. The path zigzags down into the tremendous cañon of the Ameca and fords the river seven times. As we dropped down into the hot cañon bottom I saw from afar a grove of the Ironwood trees, Guaiacum Coulteri Gray, covered with their deep sky-blue fragrant flowers, and I only wished all my botanically inclined friends were with me to enjoy them and the rest of the beautiful Mexican flora as much as I did.

About 1600 numbers of plants were collected, consisting of lichens, mosses, ferns, grasses, herbs, shrubs and trees. One new genus was found, and so far as known at present about fifty new species. All the reports are not yet in. My itinerary follows.

Itinerary of Collecting Trip in the Western States of Mexico From Sept. 2, 1926 to April 19, 1927.

STATE	TOWN	DATE	
Sinaloa	Mazatlan	Sept. 2, 1926	Arrived at Mazatlan
"	.....	" 8	Train to Tepic
Nayarit	Tepic	" 9-14	Environs of Tepic
"	"	" 15	Trail to Jalcojotan
"	"	" 17	Trail to Cerro de la Cruz
"	"	" 19	Cerro de San Juan
"	"	" 20	Trail to Acapaya
"	.....	" 22	Train to Yxtlan del Rio
"	Yxtlan del Rio	" 23-25	Environs of Yxtlan
"	" " "	" 26-27	Trail to Barranca del Oro
"	" " "	" 29	Trail to Juanacata
"	" " "	Oct. 1	La Cofradia
"	" " "	" 2	Trail to Juanacata
	.....	" 4	Train to Mazatlan
Sinaloa	Mazatlan	" 5-11	At Mazatlan
"	.....	" 12	Train to Los Labrados
"	Los Labrados	" 13-16	Jungle and Marisma
"	.....	" 17	Train to Mazatlan
"	Mazatlan	" 17-21	At Mazatlan
"	.....	" 22	Train to Ruiz
Nayarit	Ruiz	" 23-24	Environs of Ruiz
"	.....	" 25-26	Dugout canoe to Tuxpan
"	.....	" 27-28	Dugout canoe to Mecaltitlan
"	Mexcaltitlan	" 29-31	Lagoon collecting in canoe
"	.....	Nov. 1	Dugout canoe to Tuxpan
"	Tuxpan	" 3-4	Environs of Tuxpan
"	"	" 5-6	Palapar Redondo
"	"	" 7	Hacienda del Conejo
"	"	" 8	Hacienda de Ybarra
"	.....	" 9	Automobile to Ruiz
"	.....	" 10	Train to Mazatlan
Sinaloa	Mazatlan	" 11-19	Environs Mazatlan
	.....	" 20-21	Steamer south
Jalisco	Puerto Vallarta	" 23-26	Environs Puerto Vallarta
"	" "	" 27	Cerro de la Cruz
"	.....	" 28	Dugout by sea to Quimixto
"	Quimixto	" 29	Monte
"	"	" 30	River border
"	"	Dec. 1	Arroyo del Chorillo
"	"	" 2	Trail to San Pedro el Tuito
"	.....	" 3	Dugout to Puerto Vallarta
"	Puerto Vallarta	" 4-6	

"	.....	" 7	Donkeyback to hills of Santa Cruz de Vallarta
"	Santa Cruz de Vallarta	" 8-12	Densely wooded hills
"	.....	" 13	Donkey to Puerto Vallarta
"	Puerto Vallarta	" 14-16	
"	" "	" 17	Rio de Cuale
"	" "	" 18-27	Awaiting transportation
"	.....	" 29-31	Mule pack to San Sebastian
"	San Sebastian	Jan. 1-27, 1927	Surrounding country
"	Real Alto	" 29-Feb. 3	Surrounding country
"	San Sebastian	Feb. 4-13	Surrounding country
"	Hacienda del Ototal	" 14-16	Surrounding country
"	Real Alto	"18-27	Surrounding country
"	Hacienda del Ototal	Mar. 2-10	Surrounding country
"	San Sebastian	" 11-13	Surrounding country
"	Las Mesitas	" 14-17	Surrounding country
"	San Sebastian	" 18-27	Surrounding country
"	.....	" 26-28	Pack train through Los Reyes to railroad
Nayarit	San Jose del Conde	" 29	Arroyo San Jose del Conde
	.....	" 30-31	Train to Mazatlan
Sinaloa	Mazatlan	Apr. 1-18	At Mazatlan
	.....	" 19	Left for San Francisco

Berkeley, Sept. 20, 1928.

THE AVOCADO, A NATIVE AMERICAN TREE FOR HOME PLANTING

W. T. Horne

Most of us have heard someone say, "I'm crazy about avocados. Do they grow on a tree? Do you think one would grow in my yard?" If it's in California, generally it might. How may we know where it is reasonable to expect or to hope for success with this most unique fruit tree? It would take a long time to give all our opinions and guesses and to tell what we do not know, but where an orange tree will live we might at least try an avocado. This would mean that by far the greater part of the people living in California might try it. In the extreme desert it is said to fail though the orange may succeed.

As to soil requirements we may say it likes good soil—probably somewhat as the sweet cherry. Over large areas of country it grows about as healthily as a cottonwood tree but there are other extensive areas where, if planted, either promptly or finally it dies, without certificate or permit of the pathologist. If we say it is due to deficient drainage we express an opinion which may divert attention from our lack of accurate information. Work under way by Dr. Haas at the Citrus Experiment Station, Riverside, indicates that it is not a plant for alkali or salt, either in the soil or in the irrigation water. It is my belief that the avocado will usually succeed better than an orange in a lawn, a dooryard or an ordinary home garden.

Before we go farther we might stop to ask about the particular qualities of this tree and what its service might be in one's home yard; or estate, if one should be more fortunate. In other words,